

Verification on cosmeceutical and whitening effect on *Pleuropterus multiflorus* extracts

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Abstract

In this study, the potential antioxidant and antimicrobial activity of *Pleuropterus multiflorus* extracts were investigated. The electron donating ability of *Pleuropterus multiflorus* water extracts showed over 63% and 70% ethanol extracts showed over 71% at a 1000 µg/ml concentration. Measurement of ABTS+ cation radical scavenging ability assay of *Pleuropterus multiflorus* water extracts and 70% ethanol showed over 99% at a 1000 µg/ml concentration. Tyrosinase inhibition activity assay of water extracts showed over 30% at 1000 µg/ml concentration. Superoxide anion radical scavenging ability assay was water extracts(83.5% at 1000 µg/ml), 70% ethanol extracts(91% at 1000 µg/ml) concentration. *Pleuropterus multiflorus* extracts also inhibited antimicrobial activity of *Staphylococcus epidermidis*. From these results, it is suggested that *Pleuropterus multiflorus* extracts can be a potential candidate for antioxidant and whitening, as well as cosmeceutical agents.

Materials&Methods

1. Electron donating ability (EDA)

: measured by Blois¹⁾ method.

2. Scavenging rate

: measured by ABTS+ cation decolorization²⁾ assay method.

3. Inhibition rate

: measured by nitroblue tetrazolium(NBT)³⁾ method.

4. Mushroom tyrosinase inhibition effect

: measured by Yagi⁴⁾ method.

5. Polyphenol contents

: measured by A.O.A.C⁵⁾ method.

6. flavonoid contents

: measured by Cannell RJP⁶⁾ method.

7. clear zone

: Paper disc⁷⁾ method

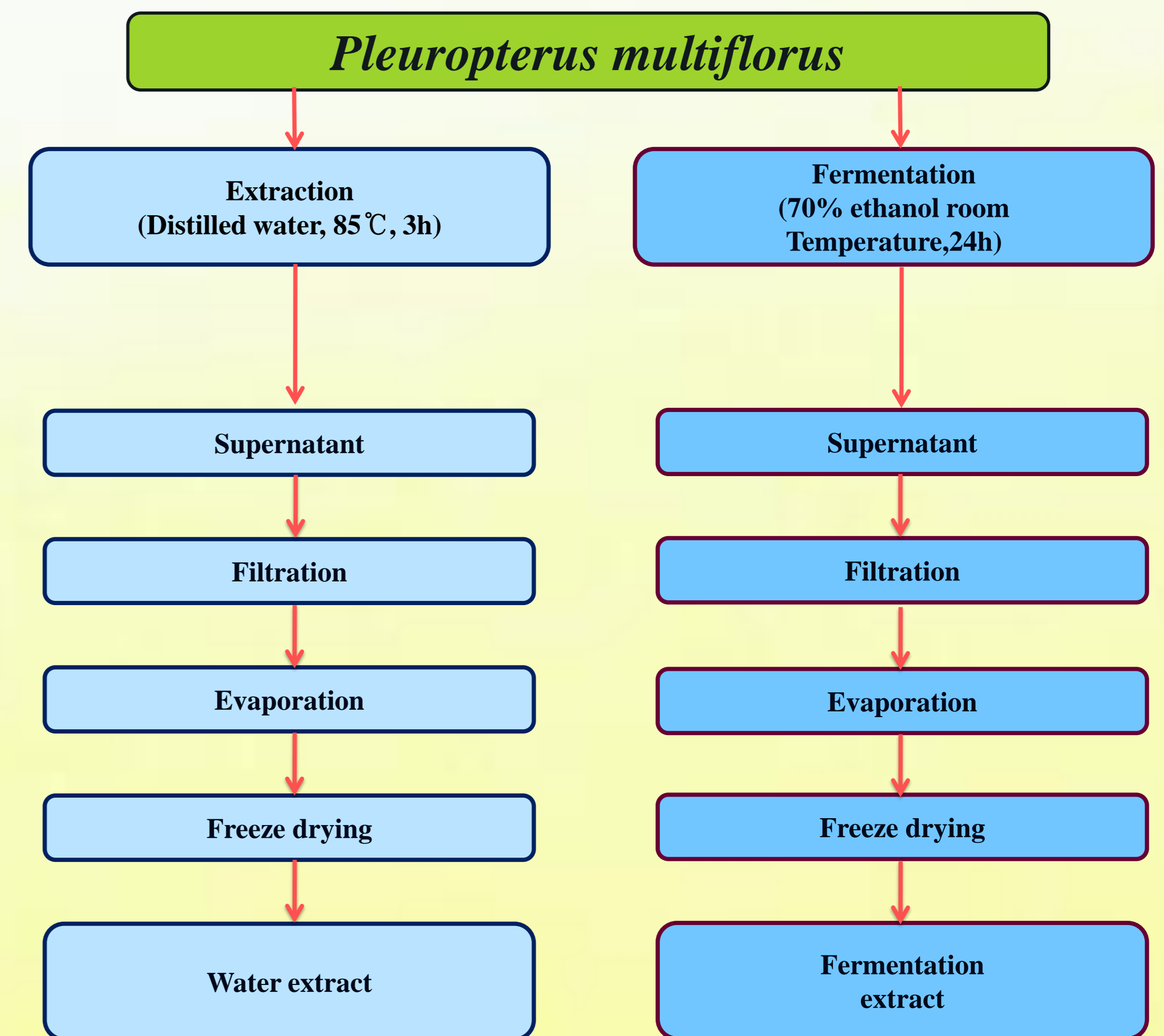
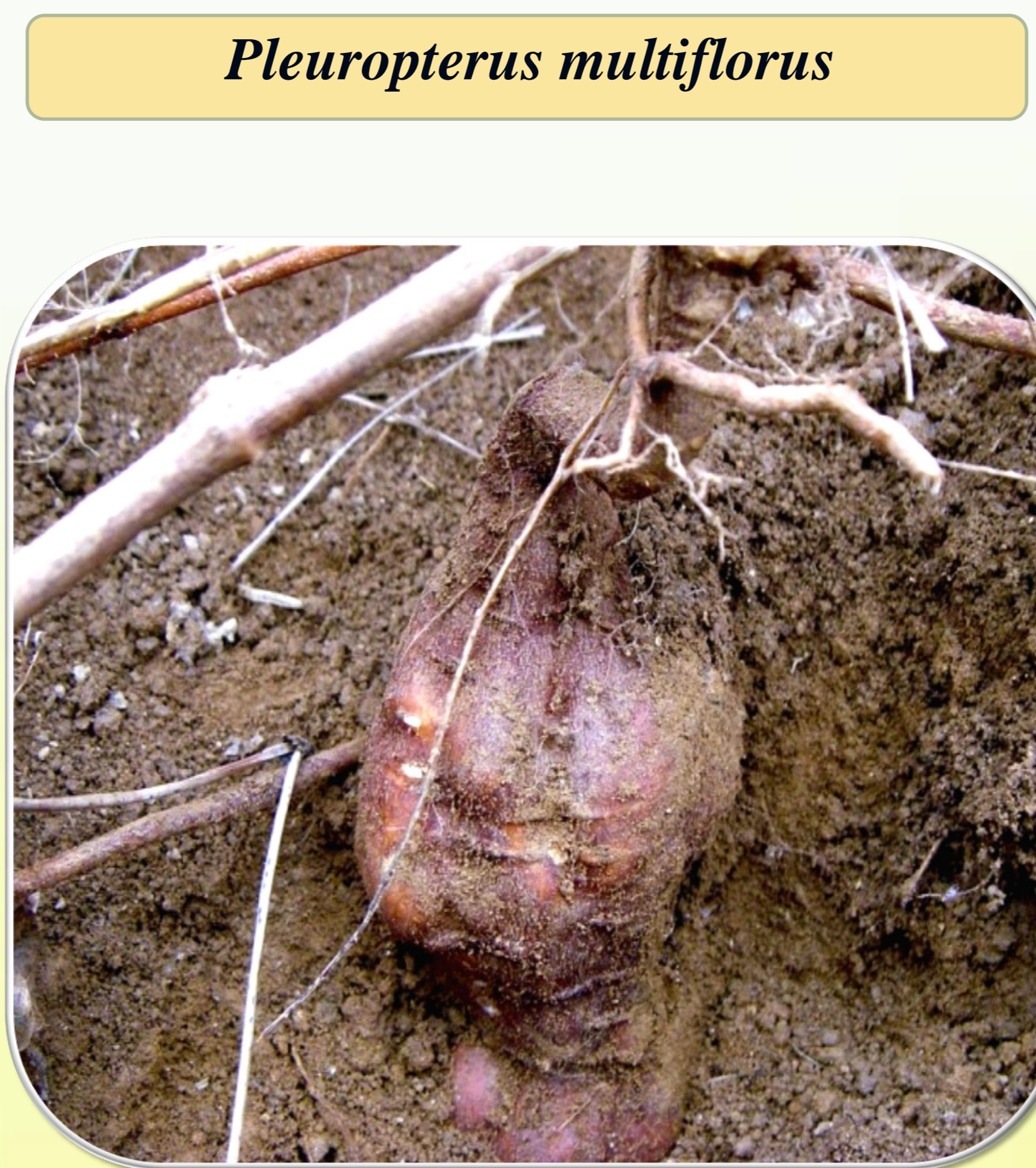


Fig. 1. The procedure for extraction from *Pleuropterus multiflorus*.

Results

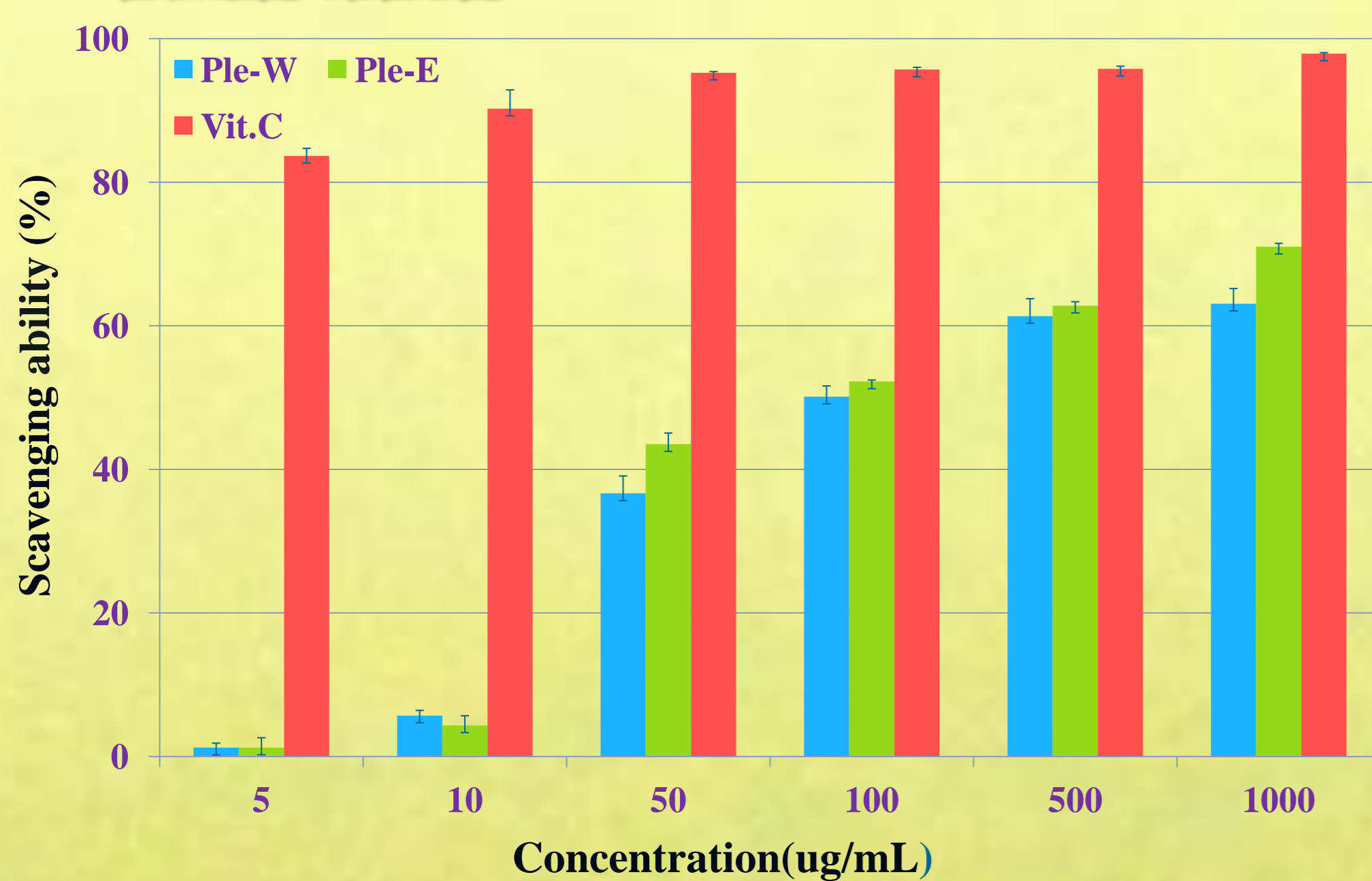


Fig. 2. Electron donating ability of *Pleuropterus multiflorus* extracts.

■ Ple-W: *Pleuropterus multiflorus* extracted with water.
 ■ Ple-E: *Pleuropterus multiflorus* extracted with 70% ethanol.
 ■ Vit.C: Ascorbic acid
 Result are means ± S.D. of triplicate data.

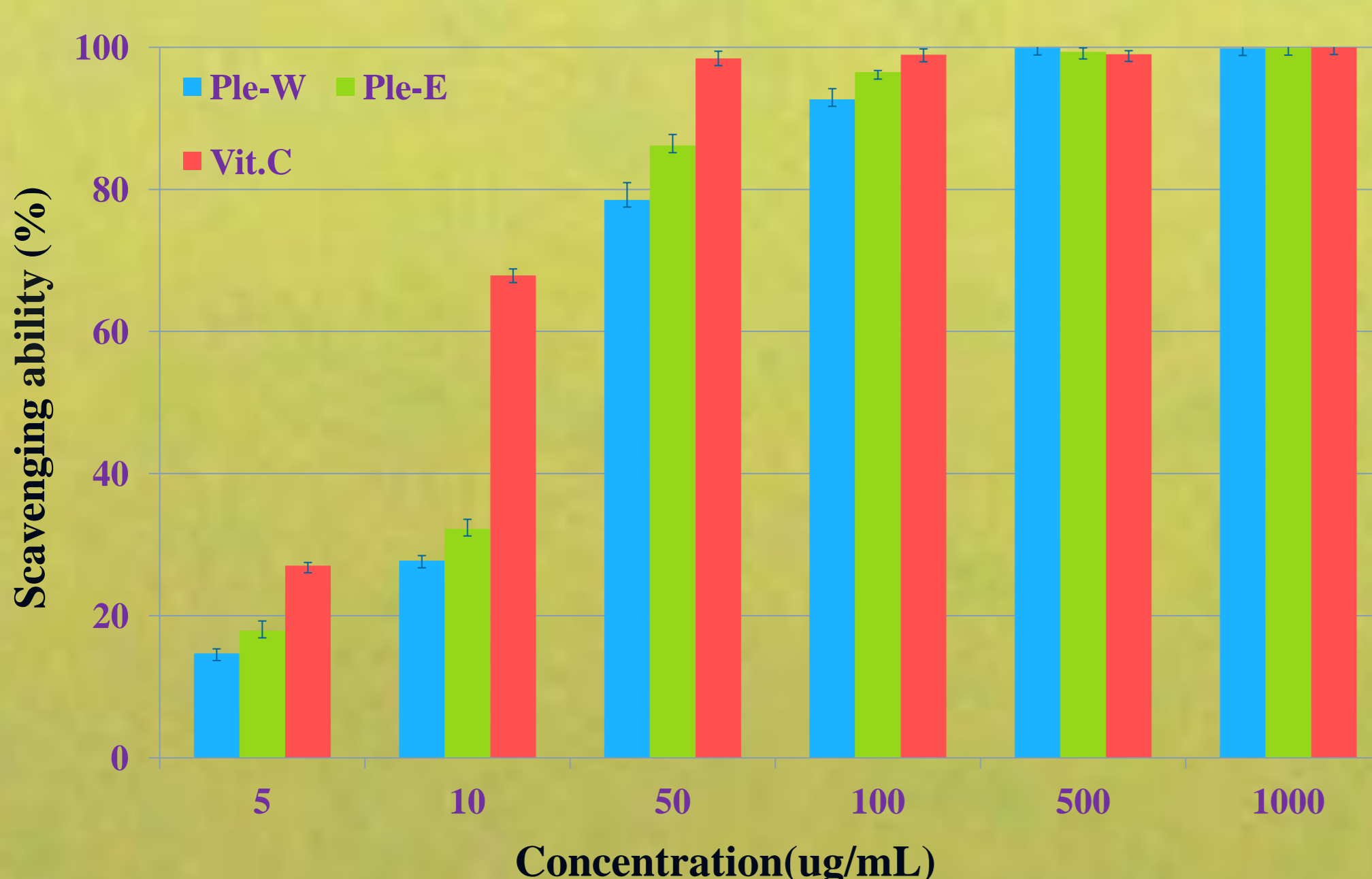


Fig. 3. ABTS+ cation radical of *Pleuropterus multiflorus* extracts.

■ Ple-W: *Pleuropterus multiflorus* extracted with water.
 ■ Ple-E: *Pleuropterus multiflorus* extracted with 70% ethanol.
 ■ Vit.C: Ascorbic acid
 Result are means ± S.D. of triplicate data.

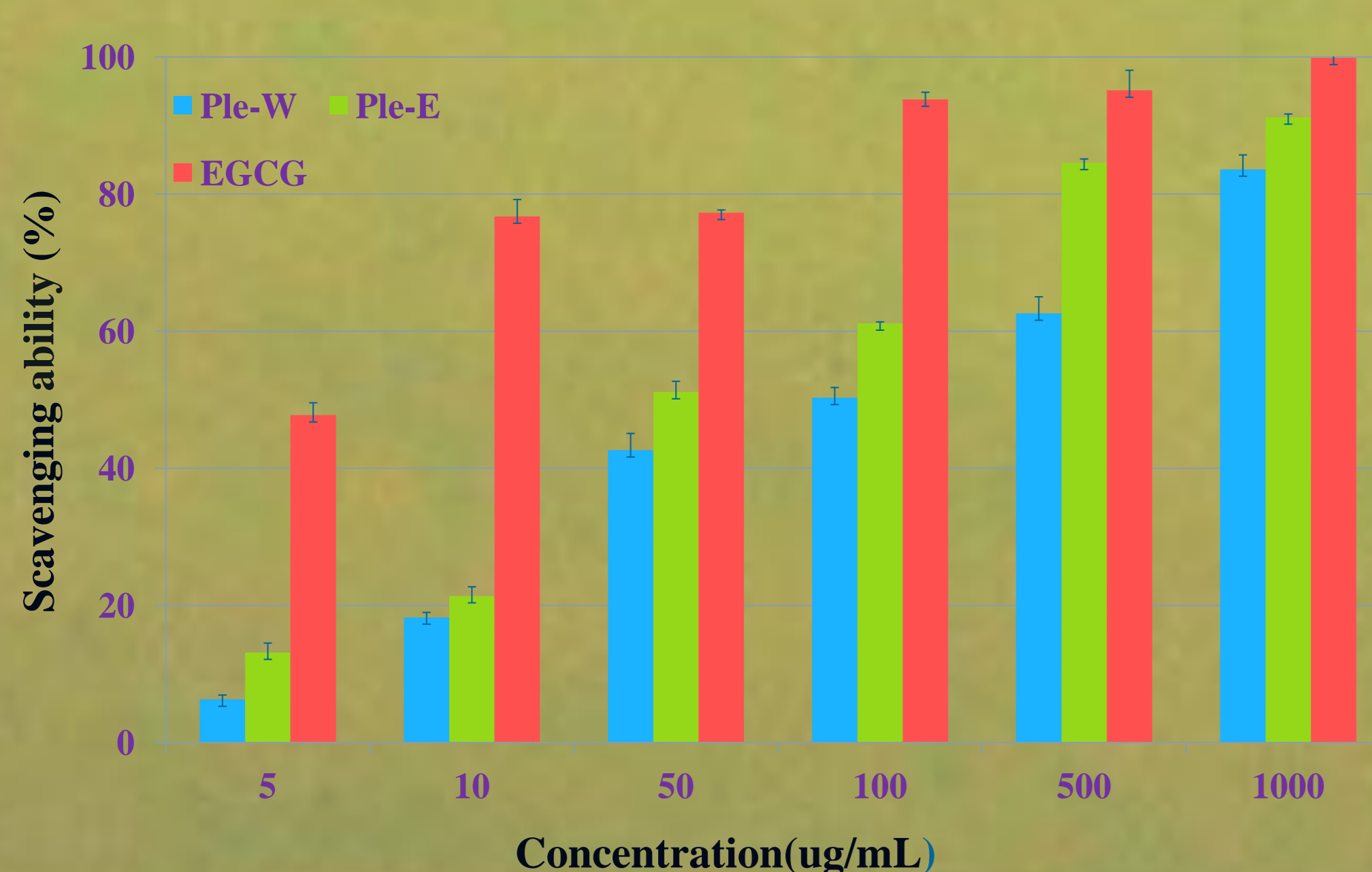


Fig. 4. Superoxide anion radical scavenging activity of *Pleuropterus multiflorus* extracts..

■ Ple-W: *Pleuropterus multiflorus* extracted with water.
 ■ Ple-E: *Pleuropterus multiflorus* extracted with 70% ethanol.
 ■ EGCG: Epigallocatechingallate
 Result are means ± S.D. of triplicate data.

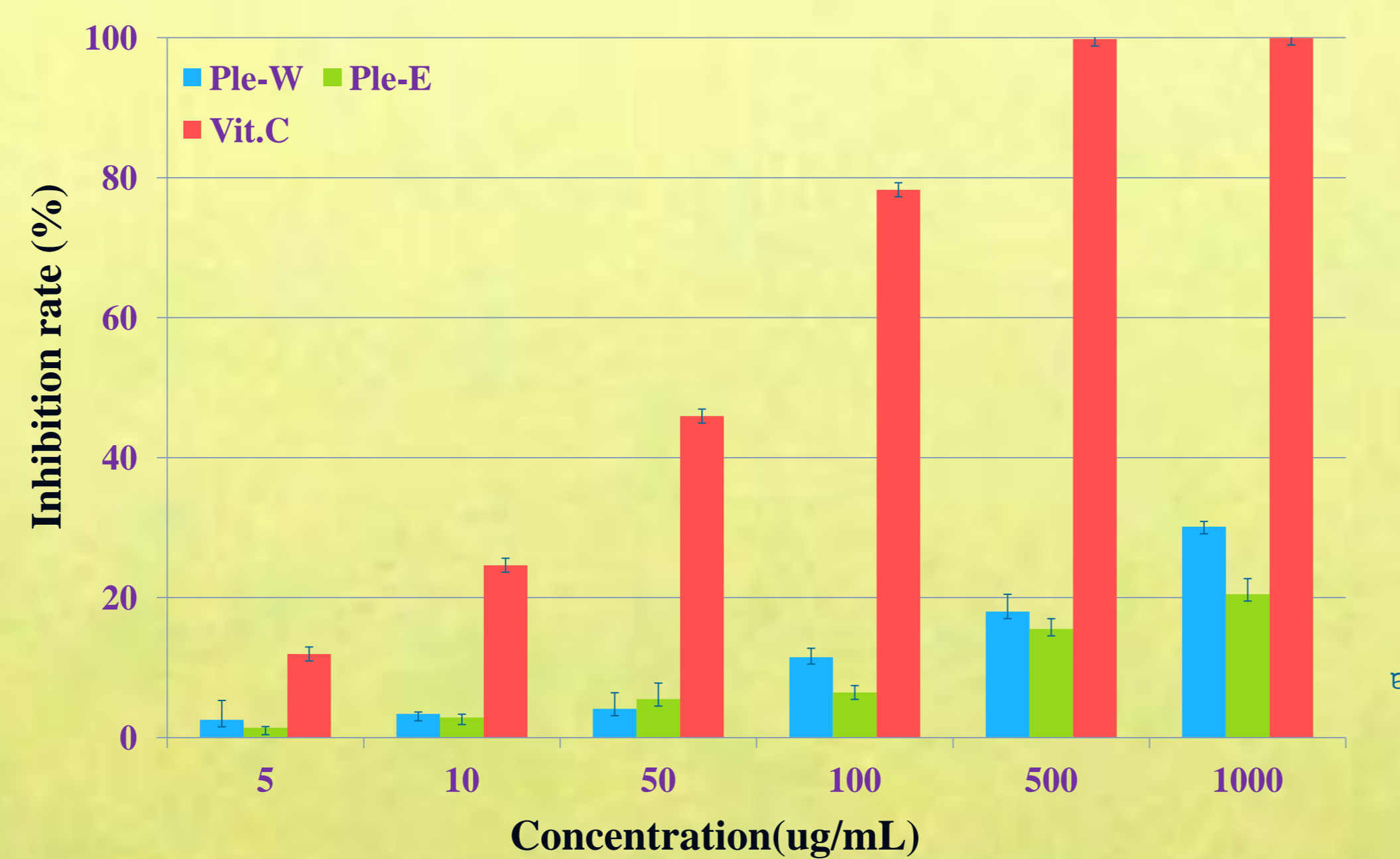


Fig. 5. Inhibition rate of *Pleuropterus multiflorus* extracts on tyrosinase.

■ Ple-W: *Pleuropterus multiflorus* extracted with water.
 ■ Ple-E: *Pleuropterus multiflorus* extracted with 70% ethanol.
 ■ Vit.C: Ascorbic acid
 Result are means ± S.D. of triplicate data.

Table 1. The contents of total polyphenol of solvent fractions from *Pleuropterus multiflorus*.

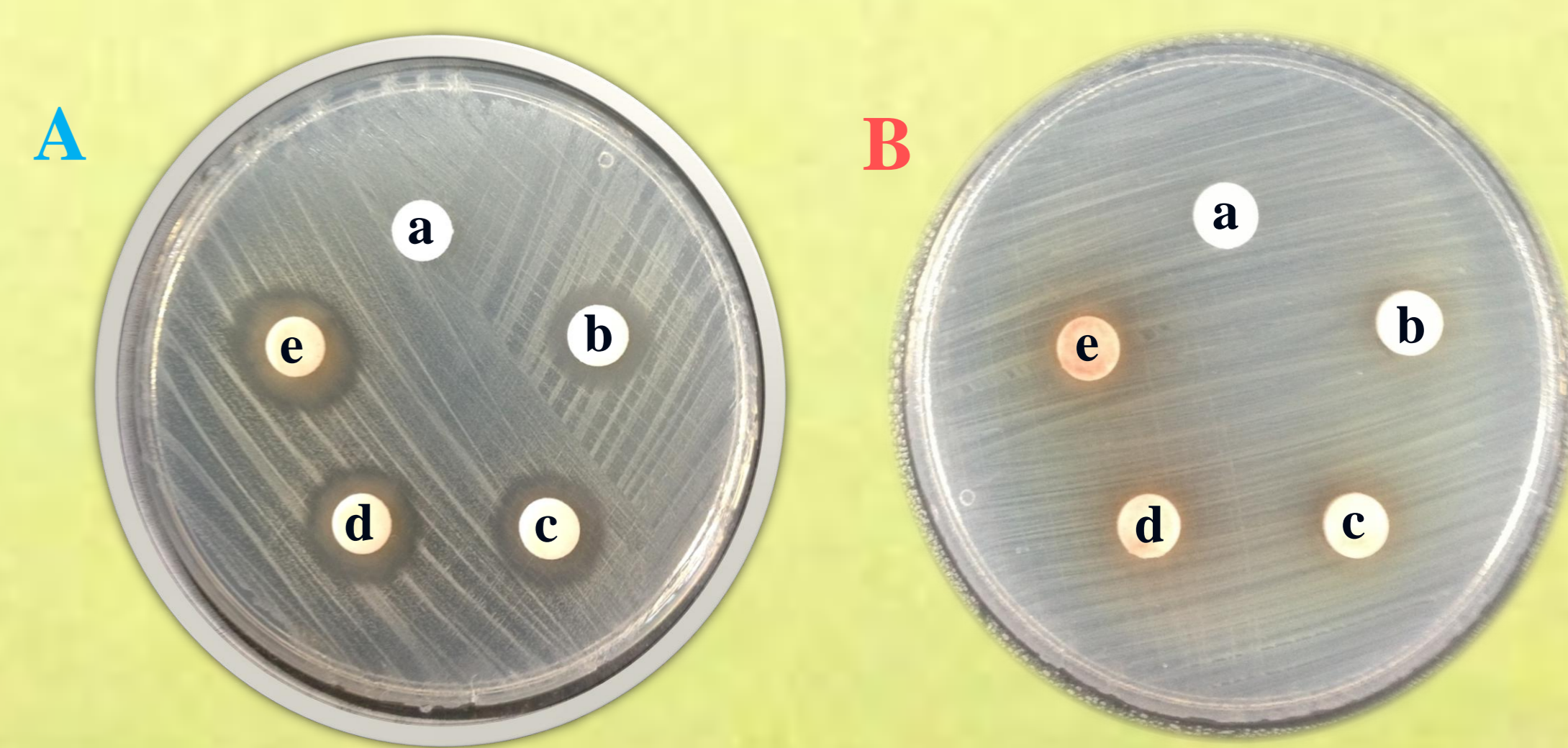
Samples	Contents (mg/g)
Water	11.11594
70% Ethanol	10.04174

Table 2. The contents of total flavonoids of solvent fractions from *Pleuropterus multiflorus*.

Samples	Contents (mg/g)
Water	1.463565
70% Ethanol	1.358371

Conclusion

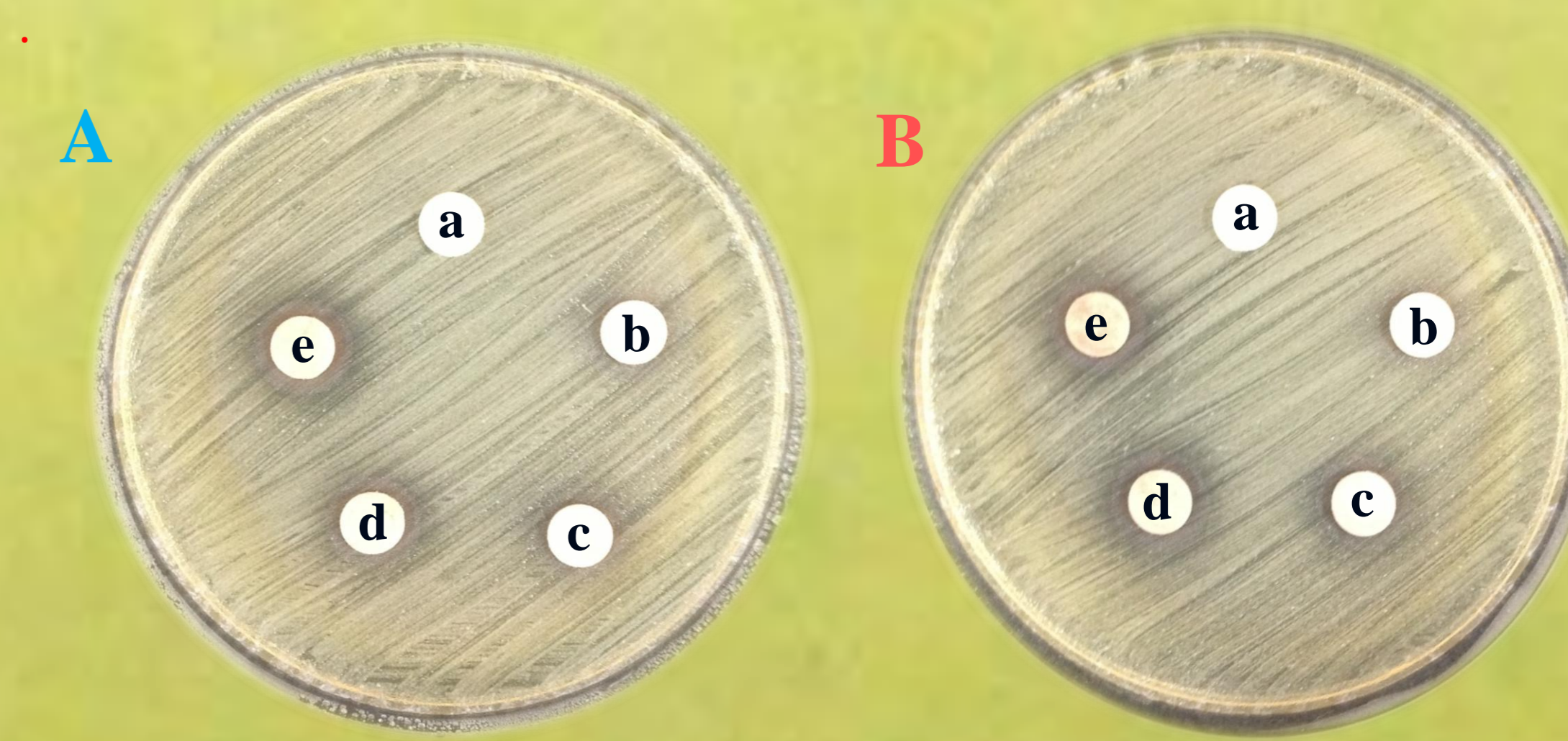
1. Antioxidant activities were evaluated by lipid oxidation, electron donating and contents of total polyphenols. Overall, the electron donating ability activities and superoxide dismutase of after the fermentation 70% A extracts showed a higher than those of 70% A extracts.
2. The tyrosinase inhibition effect related to skin-whitening was 45% in after the fermentation 70% A extracts at a 1000 µg/mL. The 70% A extracts showed about 33% at a 1000 µg/mL. The after the fermentation supernatant showed about 25% at a 1000µg/mL.
3. The water extracts from *Pleuropterus multiflorus* exhibited antimicrobial activity against *Staphylococcus epidermidis* at a 0.5mg/disc. Water extracts exhibited antimicrobial activities at *Staphylococcus epidermidis*. The ethanol 70% from *Pleuropterus multiflorus* exhibited antimicrobial activity against *propinoibacterium acnes* at a 1mg/disc. The ethanol 70% exhibited anti-microbial activities at *propinoibacterium acnes*



a : 0mg/disc, b : 0.5mg/disc, c : 1mg/disc, d : 1.5mg/disc, e : 2mg/disc

■ A : Ple-W: *Pleuropterus multiflorus* extracted with water.
 ■ B : Ple-E: *Pleuropterus multiflorus* extracted with 70% ethanol.

Fig. 7. Antimicrobial activity of solvent fractions from *Pleuropterus multiflorus* extracted on *staphylococcus epidermidis*



a : 0mg/disc, b : 0.5mg/disc, c : 1mg/disc, d : 1.5mg/disc, e : 2mg/disc

■ A : Ple-W: *Pleuropterus multiflorus* extracted with water.
 ■ B : Ple-E: *Pleuropterus multiflorus* extracted with 70% ethanol.

Fig. 8. Antimicrobial activity of solvent fractions from *Pleuropterus multiflorus* extracted on *propinoibacterium acnes*.

Reference

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